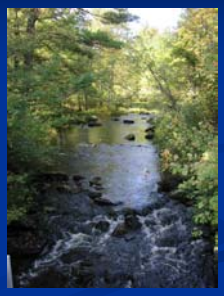
Volunteer River Assessment Program (VRAP) & Beyond

NH River and Watershed Conference
November 8, 2003

Cold River
Local Advisory Committee

What is VRAP?

- VRAP is an educational and technical assistance program designed to support and coordinate volunteer water quality monitoring of New Hampshire's rivers and streams.

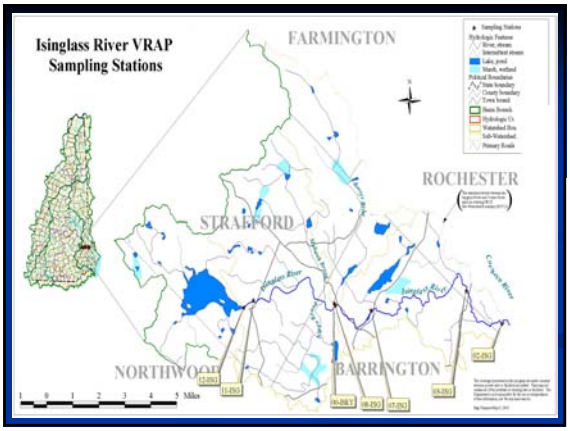


Why is VRAP Important?

- The Volunteer River Assessment Program serves a dual purpose by establishing a volunteer-driven water sampling program to assist DES in assessing water quality throughout the state, and the program empowers volunteer monitors with information about the health of New Hampshire's rivers and streams.

VRAP RIVERS

- Cocheco
- Isinglass
- Pemigewasset
- Oyster
- Ellis/Wildcat
- Cold
- Lamprey
- Soucook
- Exeter
- Ashuelot
- Piscataquog
- Powwow
- Gridley



VRAP and the Clean Water Act

- Section 305 (b) of the Clean Water Act requires each state to prepare a water quality inventory of its surface waters every two years.
- Section 303 (d) requires states to prepare a list of impaired surface waters for which comprehensive water quality studies can be prepared.

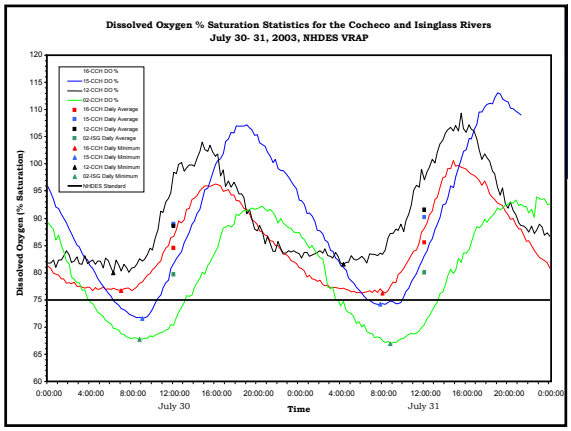
Quality Assurance/Quality Control

- Training and technical assistance to VRAP groups and volunteers
- VRAP has a Quality Assurance Project Plan (QAPP) that has been approved by NHDES and reviewed by E.P.A.
- All data is checked against replicates and duplicates and calibration values.
- Only data that passes all aspects of the QA/QC requirements is used for assessments.
- In 2003 over **90%** of VRAP data was useable for assessment purposes.

2002 VRAP Oyster River Baseline Parameters

14-Oys, Jennison Driveway, Lee, NH

Date	Weather	Time of Sample	DO (mg/L)	DO (% sat.)	H_2O Temp. (°C)	Air Temp. (°C)	pH	Turbidity (NTUs)	Conductivity (µmho/cm)
Standard*	NA	NA	>6.0	>75	Narrative	NA	naturally occurring	naturally occurring	NA
6/14/02	PC	11:10	9.42	94.2	15.4	20.5	5.76	0.35	63.5
6/28/02	PC	11:10	7.98	91.2	21.9	24.3	5.86	0.6	69.4
7/13/02	C	11:29	8.72	92.8	18.5	23.2	6.58	1.2	86.7
7/27/02	O	11:30	8.67	87.7	16	18	6.46	1.3	105.7
8/9/02	C	10:45	6.57	69	17.8	21.5	6.59	2.8	151.1
8/23/02	O	11:14	4.66	53.4	19.4	21.2	6.39	5.1	184.4
9/13/02	PC	10:50	3.83	37.8	14.8	22.6	6.55	4.2	200
10/11/02	O	12:00	8.59	78.4	11.4	15	6.64	3.6	179.8
10/25/02		12:00	10.82	82	3.7	8	6.35	2.0	79.6
11/8/02	C	12:00	12.21	90.7	2.7	6.8	5.89	0.8	
11/25/02	PC	11:10			3.5	7.4	5.45	0.4	96.9



Assessment: Waterbody Types and Sizes

Waterbody Type	Total Size	Total Number of Assessment Units
Freshwater rivers and streams	9,625 Miles	3,147
Freshwater impoundments	21, 746 Acres	805
Freshwater lakes and ponds	165,804 Acres	989
Estuaries	21.33 Square Miles	43
Ocean	70.33 Square Miles	22
	Total	**5,006**

Volunteer Data Collected 2002 - 2003

- Dissolved Oxygen Concentration 1566
- pH 1481
- Specific Conductance 1554
- Turbidity 1485
- Water Temperature 1582
- *E. coli* 554
- Total Phosphorous 243

8465 Measurements

VRAP and the Clean Water Act

VRAP 2002-2003

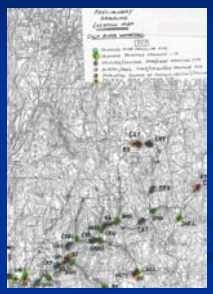
- 150 Stations Monitored
- 135 Assessment Units Monitored

- VRAP volunteers provided data on 5% of all river assessment units in New Hampshire. **This represents 20% of river assessment units for which NHDES had data.**

Developing a Monitoring Plan

BASICS:

- Objectives
- Sampling Locations
- Parameters
- Schedule/Frequency
- People Power
- Equipment
- Funding



Developing a Monitoring Plan

Photo Courtesy of Trust for Public Land

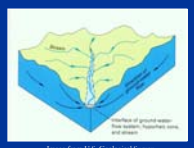
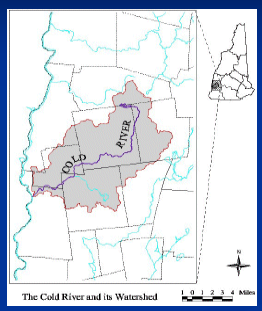


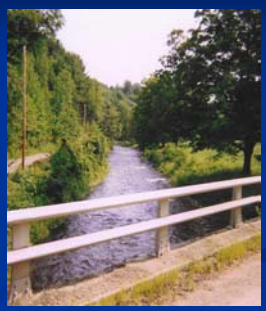
Image from U.S. Geological Survey

ISSUES:

- Watershed vs. river monitoring
- Chemical, physical and/or biological monitoring
- Equipment – borrow, rent or own?
- Educational goals vs. data collection goals
- Finding motivated, dedicated volunteers
- QA/QC and data consistency
- Using local people and data resources
- Baseline data collection vs. pollutant monitoring
- Comprehensive initial assessment
- Lack of funding for rural watersheds
- DES assessment units & monitoring requirements
- Wet weather vs. dry weather sampling
- Sampling site access

The Cold River Watershed





Cold River Water Quality Characterization Program

HISTORY:

- Outgrowth of river management planning in 2000 (1
- Scope of work developed in 2001 (2
- Initiated VRAP participation in fall '02
- Monthly VRAP sampling to date
- WQCP developed based on scope of work in winter/spring 2003
- Early WQCP activities included VBAP participation and local outreach
- Active pursuit of WQCP funding results in grants/donations- new equipment purchased in fall '03
- Delayed start but WQCP program currently underway

Cold River Water Quality Characterization Program

FEATURES:

- Comprehensive monitoring plan
- Assisting DES with impairment studies
- Local, state and regional partnerships
- Watershed perspective
- Public outreach + coordination with existing VLAP groups
- Year-round sampling
- Biological/physical parameters
- Average watershed size
- AmeriCorps volunteer
- Consistent/additional QA/QC
- Equipment purchases + plans
- Proactive assessment on "pristine" river
- Partnership with school district

Lessons Learned/Recomm.

- Be patient! It takes time to develop and implement a monitoring program.
- Design and improve your program using established guidelines
- Consider big picture issues up front
- Scale your effort based on available resources
- Find local scientists or other natural resource professionals to assist you
- Develop a written scope of work and budget
- Aggressively pursue funding
- Periodically update your program
- Public education/outreach = key
- *HAVE FUN!*

Thank You!

For additional information on the development of volunteer water monitoring programs:

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  http://www.des.state.nh.us/wmb/VRAP
- Mike Heidorn, Cold River Monitoring Coordinator
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